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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/132,157	08/11/98	FORBES	L 303.229US2

EXAMINER	
PRENTY, M	
ART UNIT	PAPER NUMBER
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MM91/0925
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/132,157	FORBES
Examiner	**Art Unit**
Prenty	2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Sep 10, 2001* .

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *11, 13, 14, 24-28, 32, and 38-43* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *11, 13, 14, 24-28, 32, and 38-43* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

This Office Action is in response to the response filed September 10, 2001.

Claims 11, 14, 24, 28, 38 and 40 are rejected under 35 U.S.C. §102(b) as being anticipated by Selvakumar et al. (United States Patent 5,426,069 already of record). See Selvakumar et al's Figs. 1-13 disclosure in particular. With respect to claims 11, 14, 24 and 28, and their "p-channel" preamble language in particular, note that a claim's preamble is generally not given patentable weight. See In re Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976).

Claims 25, 32 and 41 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Selvakumar et al. (United States Patent 5,426,069 already of record). See Selvakumar et al's Figs. 1-13 disclosure in particular. Note MPEP §2113.

Claims 13, 26, 27, 39, 42 and 43 are rejected under 35 U.S.C. §103(a) as being unpatentable over Selvakumar et al. (United States Patent 5,426,069 already of record) together with Crabbe' et al. (United States Patent 5,821,577 already of record). Specifically, the difference between Selvakumar et al's transistor (see Selvakumar et al's Figs 1-13 disclosure in particular) and the transistor recited in the set of rejected claims is the former's SiGe channel thickness is unknown while the latter's SiGe channel thickness is "approximately 100 to 1,000 angstroms" (claims 13, 26, 39 and 42) or "approximately 300 angstroms" (claims 27 and 43). Crabbe' et al. disclose forming SiGe channels 100 to 500 angstroms thick (see column 6, lines 17-22). It would have been obvious to one skilled in this art to make Selvakumar et al's SiGe channel 100 to 500 angstroms thick as suggested by Crabbe' et al. Claims 13, 26, 27, 39, 42 and 43 are thus rejected under 35 U.S.C. §103(a) as being unpatentable over Selvakumar et al. together with Crabbe' et al.

The applicant's arguments with respect to the rejections based on Selvakumar et al. are not at all persuasive.

First, the applicant's argument: "However, Selvakumar teaches 'a small SiGe region surrounded by silicon' (col. 4, ln. 17-20)," is false and without merit because it takes the "surrounded" language out of context and/or too literally. Specifically, Selvakumar's disclosure taken as a whole, including the drawings, makes clear that the SiGe region is formed at the surface of a silicon substrate and is *otherwise* "surrounded" by silicon (i.e., the SiGe region formed at the surface of the silicon substrate is "surrounded" by the silicon substrate along its bottom and sides only, not along its top as well). See Selvakumar et al. at column 2, lines 25-28 (i.e., "...the SiGe region being surrounded by silicon on *most* of the surfaces..."), at Figs. 5-7, at column 4, lines 16-19 (i.e., "...interface between [the] silicon-dioxide [gate oxide] and the SiGe channel region"), and at column 5, lines 5-11 (i.e., "...the extremely abrupt interface at SiGe-channel/Silicon dioxide").

Furthermore, speaking of Selvakumar et al's: "surrounded by silicon on *most* of the surfaces" disclosure (column 2, lines 25-28), the applicant's allegation that such appears "in the **background section**" (emphasis in original) and "is not, however, the embodiment taught by Selvakumar," is false. Selvakumar et al's column 2, lines 25-28, disclosure is part of Selvakumar et al's **SUMMARY OF THE INVENTION**.

The applicant's allegation: "Selvakumar in fact teaches away from creating a $Si_{1-x}Ge_x/SiO_2$ gate oxide interface" is false and without merit. First, as explained above, the applicant takes Selvakumar et al's "surrounded" language out of context and/or too literally (not to mention selectively). Furthermore, as also noted above,

Selvakumar et al. both illustrate a $Si_{1-x}Ge_x/SiO_2$ gate oxide interface (see Figs. 5-7) and reference the $Si_{1-x}Ge_x/SiO_2$ gate oxide interface (see column 4, lines 16-19 (i.e., "...interface between [the] silicon-dioxide [gate oxide] and the SiGe channel region"), and column 5, lines 5-11 (i.e., "...the extremely abrupt interface at SiGe-channel/Silicon dioxide")).

The applicant's observation: "The Examiner's reference to col. 4, lin. 16-19 of Selvakumar appears to refer to an interface between silicon-dioxide and a SiGe channel. The text does not specifically refer to an interface with a region of SiGe," is inconsistent and without merit on its face.

The applicant's argument: "It appears that Selvakumar has defined the SiGe *channel* to include the broader category of a small SiGe region engulfed in silicon. The SiGe *channel* will therefore have an interface with silicon-dioxide, even though the actual SiGe is separated from the silicon-dioxide by a layer of silicon as explicitly outlined in col. 5, ln. 32-42 excerpted above," is false. Again, the applicant is taking Selvakumar et al's "surrounded" language out of context and/or too literally (not to mention selectively). Selvakumar et al. neither explicitly or implicitly disclose that its SiGe channel region is separated from the SiO_2 gate oxide layer by a layer of silicon. Indeed, Selvakumar et al. disclose just the opposite (i.e., that its SiGe channel region is not separated from the SiO_2 gate oxide layer by a layer of silicon), and the applicant has provided no evidence to the contrary.

The applicant's argument: "Figures 5-7, as referenced by the examiner, indicate a 'Ge implant area 8' (col. 3, ln. 47). Again, this text does not specifically refer to the SiGe region. The implant area 8 appears to be more broadly defined to include

a small SiGe region engulfed in silicon. The explicit text of col. 5, ln. 32-42 appears to be the most accurate discussion in Selvakumar with respect to the interfaces involved," is also false. Again, the applicant is taking Selvakumar et al's "surrounded" language out of context and/or too literally (not to mention selectively). Again, Selvakumar et al. neither explicitly or implicitly disclose that its SiGe channel region is separated from the SiO_2 gate oxide layer by a layer of silicon. Indeed, Selvakumar et al. discloses just the opposite (i.e., that its SiGe channel region is not separated from the SiO_2 gate oxide layer by a layer of silicon), and the applicant has provided no evidence to the contrary. Finally, the examiner respectfully submits that "the most accurate discussion in Selvakumar with respect to the interfaces involved" is, well, a fair and complete review of Selvakumar et al's disclosure taken as a whole.

The applicant's conclusion: "The SiGe region of Selvakumar therefore is adjoined to a silicon region which in turn is adjoined to a SiO_2 gate oxide," is simply a non sequitur.

The applicant's argument with respect to the rejection based on Selvakumar et al. together with Crabbe' et al. is based on its unpersuasive arguments with respect to Selvakumar et al. and thus falls therewith.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. §1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE

PURSUANT TO 37 C.F.R. §1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Registered practitioners can telephone examiner Prenty at (703) 308-4939. All other parties should telephone (703) 308-0956.

Mark Prenty

Mark V. Prenty
Primary Examiner